



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,578	01/21/2004	Robert W. Bower	BOW5075.14A1	4912
8156	7590	02/06/2007	EXAMINER	
JOHN P. O'BANION O'BANION & RITCHEY LLP 400 CAPITOL MALL SUITE 1550 SACRAMENTO, CA 95814			JEFFERSON, QUOVAUNDA	
			ART UNIT	PAPER NUMBER
			2823	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		02/06/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/763,578	Applicant(s) BOWER, ROBERT W.	
	Examiner Quovaunda Jefferson	Art Unit 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-80 is/are pending in the application.
4a) Of the above claim(s) 29-80 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-28 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Claims 29-80 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 27th of October 2006.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-26 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yue, US Patent 5,244,819 (as cited in previous Office Action).

Regarding claim 1, Yue teaches a multilayered material for fabrication of a nanodevice, comprising of a device layer **28** and a substrate layer **20, 22, 24**, said substrate layer having a top surface (**top of layer 24**) adjacent to said device layer and

Art Unit: 2823

a bottom surface (**bottom of layer 20**), wherein said substrate layer comprises a diffusion layer **24** having a collection region **38** adapted for capture of hydrogen (column 1, line 30 and column 3, lines 4-6), and wherein the collection region is positioned away from a bottom surface of the substrate **20** and towards a top surface (top of layer 24. See figures 1-3).

Yue fails to teach the substrate layer is adapted for the diffusion of hydrogen from the bottom surface to the collection region. However, in article and device claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963) (The claims were directed to a core member for hair curlers and a process of making a core member for hair curlers. Court held that the intended use of hair curling was of no significance to the structure and process of making).

Regarding claim 2, Yue teaches said substrate layer further comprises an insulator layer **26** between said device layer and said diffusion layer and wherein the collection region is adjacent the insulator layer (figure 3).

Regarding claim 3, Yue teaches said collection region is a heavily doped region for capture of hydrogen (column 1, line 30 and column 3, lines 4-6).

Regarding claim 4, Yue teaches a material as recited in claim 1, wherein said collection region is a getter/acceptor region for capture of hydrogen (column 1, line 52-53).

Regarding claim 5, Yue teaches said device layer comprises a material having at least a portion that has been optimized for fabricating said nanodevice (column 2, lines 63-66 and figure 2).

Regarding claim 6, Yue teaches said insulator layer comprises a material that provides a high degree of electrical and thermal insulation between the diffusion layer and the device layer (column 2, lines 46-47).

Regarding claim 7, Yue teaches said diffusion layer comprises a material optimized for a high rate of diffusion of hydrogen there through (column 1, lines 53-57).

Regarding claim 8, Yue teaches a multilayered material for fabrication of a nanodevice, comprising of a device layer **28** and a substrate layer **20, 22, 24** adjacent said device layer, said substrate layer having a top surface (**top of layer 24**) adjacent said device layer, and a bottom surface (**bottom of layer 20**), wherein said substrate

Art Unit: 2823

layer comprises a diffusion layer **24** having a collection region **38** adapted for capture of hydrogen, wherein said substrate layer further comprises an insulator layer **26** between said device layer and said diffusion layer, wherein the collection region is positioned away from the bottom surface of the substrate and towards the surface wherein the collection region is adjacent to the insulator layer (figure 3)

Yu fails to teach the substrate layer is adapted for diffusion of hydrogen from the bottom surface of the collection region. However, in article and device claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963) (The claims were directed to a core member for hair curlers and a process of making a core member for hair curlers. Court held that the intended use of hair curling was of no significance to the structure and process of making).

Regarding claim 9, Yue teaches said collection region is a heavily doped region for capture of hydrogen (column 1, line 30 and column 3, lines 4-6).

Regarding claim 10, Yue teaches said collection region is a getter/acceptor region for capture of hydrogen (column 1, lines 52-53)

Regarding claim 11, Yue teaches said device layer comprises a material having at least a portion that has been optimized for fabricating said nanodevice (column 2, lines 63-66 and figure 2).

Regarding claim 12, Yue teaches said insulator layer comprises a material that provides a high degree of electrical and thermal insulation between the diffusion layer and the device layer (column 2, line 47).

Regarding claim 13, Yue teaches said diffusion layer comprises a material optimized for a high rate of diffusion of hydrogen there through (column 1, lines 53-57).

Regarding claim 14, Yue teaches a multilayered material for use in fabrication of a nanodevice, comprising of a device layer **28**, an insulator layer **26** adjacent said device layer, and a diffusion layer **24** having a collection region **38** adapted for capture of hydrogen adjacent said insulator layer, and wherein the diffusion layer has a bottom surface (**bottom of layer 24**), and the collection region **38** is positioned away from the bottom surface and towards the insulator layer (figure 3).

Yue fails to teach the diffusion layer is adapted for the diffusion of hydrogen from the bottom surface to the collection region. However, in article and device claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963) (The claims were directed to a core member for hair curlers and a process of making a core member for hair curlers. Court held that the intended use of hair curling was of no significance to the structure and process of making).

Regarding claim 15, Yue teaches said collection region is a heavily doped region for capture of hydrogen (column 1, line 30 and column 3, lines 4-6)

Regarding claim 16, Yue teaches said collection region is a getter/acceptor region for capture of hydrogen (column 1, lines 52-53).

Regarding claim 17, Yue teaches said device layer comprises a material having at least a portion that has been optimized for fabricating said nanodevice (column 2, lines 63-66 and figure 2).

Regarding claim 18, Yue teaches said insulator layer comprises a material that provides a high degree of electrical and thermal insulation between the diffusion layer and the device layer (column 2, line 47).

Regarding claim 19, Yue teaches said diffusion layer comprises a material optimized for a high rate of diffusion of hydrogen there through (column 1, lines 53-57).

Regarding claim 20, Yue teaches a multilayered material for use in fabrication of a nanodevice, comprising of a layer of material **28** for device fabrication, a layer **26** of insulator material, and a layer of material **24** through which hydrogen can diffuse at a high rate and having a collection region **38** adapted for capture of hydrogen, wherein said layer of insulator material is disposed between said layer of material for device fabrication and said collection region, and wherein the layer of material through which hydrogen can diffuse has a bottom surface (**bottom of layer 24**), and wherein the collection region **38** is positioned away from the bottom surface (**bottom of layer 20**) and toward the layer of insulator material **914** (figure 3).

Yue fails to teach the layer of material through which hydrogen can diffuse is adapted for diffusion of hydrogen from the bottom surface to the collection region. However, in article and device claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the

intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963) (The claims were directed to a core member for hair curlers and a process of making a core member for hair curlers. Court held that the intended use of hair curling was of no significance to the structure and process of making).

Regarding claim 21, Yue teaches said collection region is a heavily doped region for capture of hydrogen (column 1, line 30 and column 3, lines 4-6)

Regarding claim 22, Yue teaches said layer of material through which hydrogen can diffuse has a getter/acceptor region for capture of hydrogen (column 1, line 52-53).

Regarding claim 23, Yue teaches said layer of material for device fabrication comprises a material having at least a portion that has been optimized for fabricating said nanodevice (column 2, lines 63-66 and figure 2).

Regarding claim 24, Yue teaches said layer of insulating material provides a high degree of electrical and thermal insulation between the layer of material through which hydrogen can diffuse and the layer for device fabrication (column 2, line 47).

Regarding claim 25, Yue teaches said diffusion layer comprises a material optimized for a high rate of diffusion of hydrogen there through (column 1, lines 53-57).

Regarding claim 26, Yue teaches a multilayered material for use in fabrication of a nanodevice, comprising of a layer of material **28** for device fabrication, said material having at least a portion that has been optimized for fabricating said nanodevice, a layer of material **24** through which hydrogen can diffuse at a high rate and having a collection region **38** adapted for capture of hydrogen, said collection region comprising a heavily doped region or a getter/acceptor region (column 1, line 30 and column 3, lines 4-6), wherein said layer of material through which hydrogen can diffuse comprises a material optimized for a high rate of diffusion of hydrogen therethrough (column 1, line 47), a layer of insulator material **26**, wherein said layer of insulator material provides a high degree of electrical and thermal insulation between the layer of material through which hydrogen can diffuse and the layer of material for device fabrication (column 2, line 47), wherein the layer of insulator material is disposed between the layer of material for device fabrication and the layer of material through which hydrogen can diffuse, and wherein the collection region is positioned away from the bottom surface and towards the layer of insulator material (figures 1-3).

Yue fails to teach the layer of material through which hydrogen can diffuse is adapted for diffusion of hydrogen from the bottom surface to the collection region. However, in article and device claims, intended use must result in a structural difference

between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963) (The claims were directed to a core member for hair curlers and a process of making a core member for hair curlers. Court held that the intended use of hair curling was of no significance to the structure and process of making).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over all as applied to claims 1, 8, 14, 20 or 26 above, and further in view of Kosaki, US Patent 5,200,641 (as cited in previous Office Action).

Regarding claim 27, Yue fails to teach at least one heat dissipation layer.

Kosaki teaches the use of a heat dissipation layer (abstract) as a metal layer that is placed on the rear surface of the semiconductor substrate to remove heat from the semiconductor device, thereby reducing the chance of device failure due to overheating of the semiconductor circuit.

It would be obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Kosai with that of Yue because a heat dissipation layer made of a metal layer is placed on the rear surface of the semiconductor substrate to remove heat from the semiconductor device, thereby reducing the chance of device failure due to overheating of the semiconductor circuit.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over all as applied to claims 1, 8, 14, 20 or 26 above, and further in view of Schelhorn, US Patent 4,383,270 (as cited in previous Office Action).

Regarding claim 28, Yue fails to teach at least one RF shield layer.

Schelhorn teaches a material comprising at least one RF shield (column 4, lines 24-25) made of copper. The copper RF shield protects the semiconductor from RF energy and considerably reduces the magnetic effect of the substrate would otherwise be exposed to, which would result in electrical losses.

It would be obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Schelhorn with that of Yue because the copper RF shield protects the semiconductor from RF energy and considerably reduces the magnetic effect of the substrate would other wise be exposed to, which would result in electrical losses.

Response to Arguments

Applicant's arguments filed July 17th, 2006 have been fully considered but they are not persuasive.

Regarding claims 1-7, Applicant argues that no of the cited references teach the new amended limitations added; in the case of claims 1-7, the reference of question is Yue, US Patent 5,244,819.

In response to this argument, Yue still teaches a collection region (**38**) that is positioned away from the bottom surface of the substrate (which is the bottom of layer **20**) and said collection region is towards the top of the substrate. See figures 1-3.

Yue does fail to teach the substrate layer being adapted for diffusion of hydrogen from the bottom surface to the collection region. While intended use recitations and

Art Unit: 2823

other types of functional language cannot be entirely disregarded, however, in device and article claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963) (The claims were directed to a core member for hair curlers and a process of making a core member for hair curlers. Court held that the intended use of hair curling was of no significance to the structure and process of making.)

Applicant's arguments with respect to claims 8-28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2823

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quovaunda Jefferson whose telephone number is 571-272-5051. The examiner can normally be reached on Monday through Friday, 8AM to 4:30PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2823

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

QVJ
QVJ


MICHELLE ESTRADA
PRIMARY EXAMINER